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ABSTRACT

The News Media Manual is one of a set of twenty-one manuals used in METRO-APEX 1974, a computerized college and professional level, computer-supported, role-play, simulation exercise of a community with "normal" problems. Stress is placed on environmental quality considerations. APEX 1974 is an expansion of APEX--Air Pollution Exercise (ED 064 530-550; ED 075 261; ED 081 619), and includes roles for an environmental quality agency, water quality manager, solid waste manager, and various pressure groups, in addition to the previously developed roles of city and county politicians, city and county planners, air pollution control office, developers, industrialists and newspaper. Two industries have been added, as have a number of program options. The participants may range in number from 17 to 100. Each run of the game should consist of at least three cycles (simulated years), the optimum being five cycles. Each cycle should span at least a three-hour period. A cycle is composed of two major phases: the first is the game simulation; in the second phase, decisions emerging out of the game simulation are analyzed by a computerized system of integrated simulation models. The METRO-APEX computer program is in Fortran IV and runs on an IBM 360-50 or higher series computer. (BT)

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METRO: APEX

volume 20.1

NEWS MEDIA MANUAL

2

revised 1974

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METRO-APEX

1974

A Computerized Gaming Simulation Exercise
For Training in Environmental Management
and Urban Systems

Developed by the
COMEX Project
University of Southern California

through a grant form the
Control Programs Development Division
Environmental Protection Agency

A revised version of the APEX Air Pollution Exercise
developed jointly by the
COMEX Project, University of Southern California
and
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June 1974

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PREFACE

PREFACE

METRO-APEX is the result of a long term research and development effort by a number of dedicated individuals. The inspiration, and much of the technical basis evolved from a similar exercise (M.E.T.R.O.) originally developed by the Environmental Simulation Laboratory, University of Michigan. In 1966, a grant from the Division of Air Pollution Control, U.S. Public Health Service was awarded to the COMEX Research Project, University of Southern California, to develop a dynamic teaching instrument, METRO-APEX. Working in close cooperation, the COMEX Research Project and the Environmental Simulation Laboratory successfully developed the initial version of the METRO-APEX exercise in 1971. This computer-based gaming simulation was designed to provide a laboratory urban community in which air pollution management trainees could apply and test the knowledge and skills gained through conventional educational methods.

METRO-APEX has proven to be highly adaptable to training programs dealing with the many aspects of air pollution control including law, management, air quality monitoring, land use planning, budget preparation, citizen participation programs, state and federal grant procedures, and political decision-making processes. As a result, METRO-APEX is in great demand as a valuable supplement to university training programs, and in many cases is being used as a central curriculum focus. Over 60 universities have been trained in the use of METRO-APEX. It has also been translated into French and Spanish and is being used in seven countries outside of the United States.

Based on the success of the initial METRO-APEX program, COMEX was awarded a grant from the Control Programs Development Division of the Environmental Protection Agency to substantially revise and broaden the simulation exercise to encompass the wide spectrum of environmental management issues. This current version, of which this manual is a part, was completed in June 1974 and greatly increases the utility and teaching potential of the exercise. In this version, the interrelationships among air, water and solid waste are demonstrated, the strategies and options available to players have been broadened, new roles have been added, the exercise materials have been updated to reflect the latest technology and nomenclature, and many of the operational problems associated with the earlier version have been rectified.

METRO-APEX is one of, if not the most complex gaming-simulations of an urban area in use today. Although it was designed to supplement standard teaching methods, APEX is far more than an educational tool. It is a communication channel of a new level--capable of providing both the language and the forum for information transfer between persons and groups with different educational and cultural backgrounds as well as different perspectives of the urban situation.

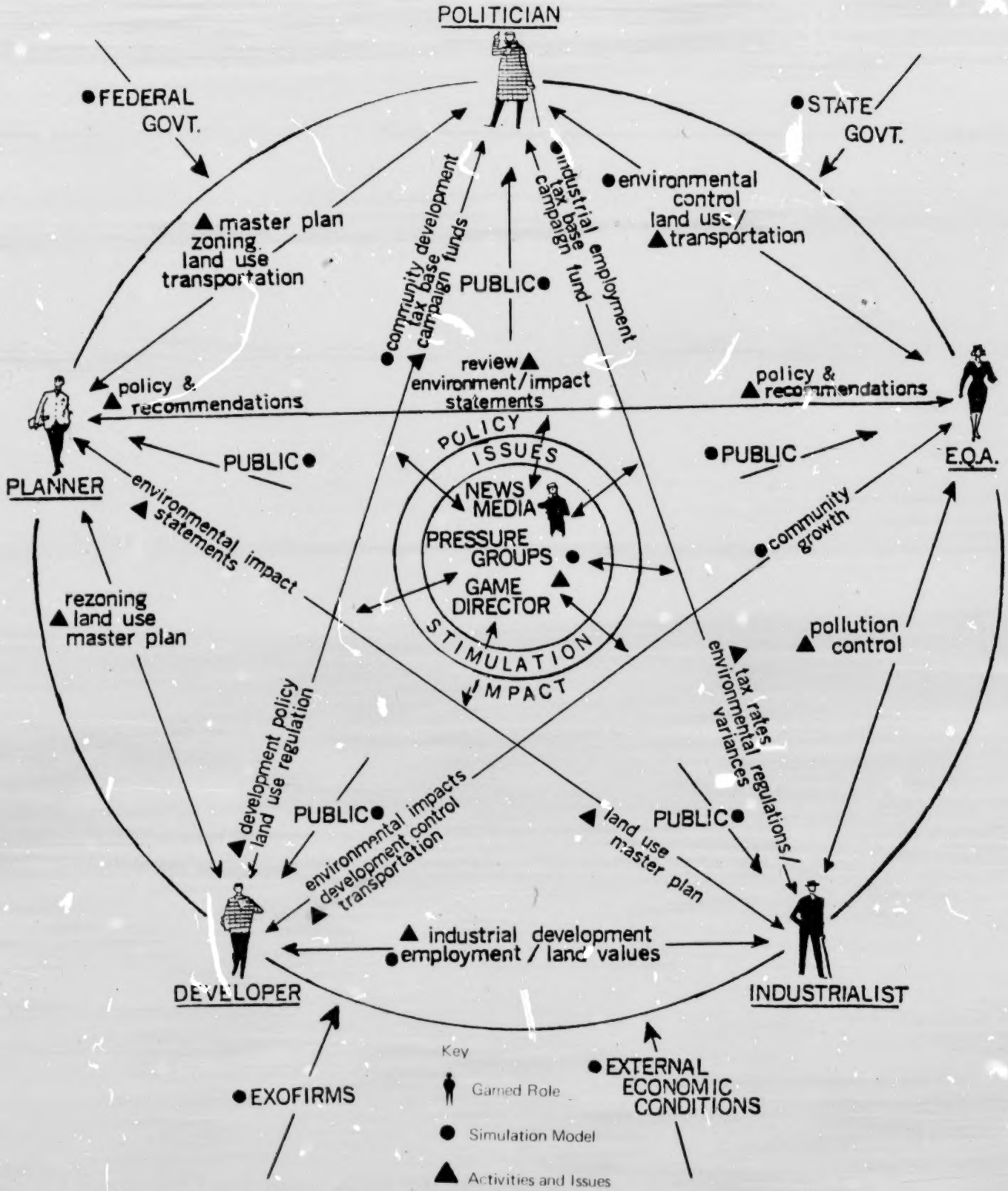
METRO-APEX is composed of two essential components: (1) a computerized system made up of a series of well-integrated simulation models linked to a (2) "gamed" environment encompassing a series of interactive roles. The computerized system predicts the changes that occur in several sectors of the urban system in response to the decisions made by participants in the "gamed" environment, decisions made by persons outside the "gamed" environment (other actors whose behavior is simulated in the computer), and external pressures on the metropolitan area (also simulated in the computer).

The County of APEX is run year by year by principle decision makers performing both the mundane and extraordinary functions of their office in the "gamed" environment. Each cycle or year is condensed in time to a three to eight hour session during which the decision makers formulate their yearly policy. The decisions that emerge out of the "competitive--cooperative" environment of the gaming-simulation are used as priming inputs to the computer simulation. The change in the status of the urban area is calculated by the computer and returned to the decision makers as the primary input to the next cycle of action. Included in the change picture generated by the computer are selected social, economic and physical indicators which show the magnitudes of change in key areas and a newspaper which serves as the focal point of local public opinion.

The key decision makers acting in the gamed environment include an Environmental Quality Agency with departments of Air Pollution, Water Pollution and Solid Wastes; Politicians, Planners and Administrative Officers from a Central City and a County; Land Developers and Industrialists from the private sector; and representatives from the News Media and Pressure Groups. The Politicians are responsible for the administration of their respective jurisdictions and for the formulation and implementation of various programs to upgrade the social status of their constituents. The Planners serve as aides to the Politicians and represent the major long range coordinating force in the community. The Environmental Control Officers are charged with the task of monitoring and alleviating the pollution problems. The private business sectors operate to foster their own interests and frequently those of the community. Pressure Groups and News Media advocate various positions on community issues. Generally, each decision maker finds it to his advantage to coordinate and/or compete with other players in his efforts to promote his strategies. The METRO-APEX General Interaction Diagram included here indicates possible linkages among the roles.

In general, people have great difficulty understanding the dynamics of a complex system through traditional means. Gaming-simulation offers participants the opportunity to study, work with, and discuss the structure of such a system and to experiment with intervention strategies designed to change that structure. When used as a teaching device, the strength of a gaming-simulation such as METRO-APEX lies in the opportunity afforded participants for involvement in the system. When compared with the passive observation of the system offered by traditional methods, this approach has had great success.

METRO-APEX INTERACTION DIAGRAM



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CHAPTER 1

A Brief Description of APEX County

Chapter 1

A BRIEF DESCRIPTION OF APEX COUNTY

History

The first settlers of APEX County were farm families emigrating from New England and New York State beginning about 1830. During the middle of the nineteenth century, German immigrants continued the settlement patterns of established dispersed family farms. Income to pay for the necessary imports of products from the East was derived primarily from the production of farm crops and, more importantly, timber. Small market towns, often containing milling facilities, developed between 1820 and 1860. At the same time, the County was organized as a unit of government by the State, and the basic network of roads was completed.

The major impetus for the later development of the Central City as a regional center was its selection as the state capitol in 1847. The nation's first land-grant university was established east of the Central City in 1855, further enhancing its growth. Central City was incorporated in 1859 and the Suburb, in which the university was located, was incorporated in 1910. The University's control of a large block of land was to exercise profound influence on the future physical pattern of development. Much of the logical development corridor outward from the City was preempted by this facility.

Steam railroads were first built into APEX County beginning in the 1860's. Those small market-milling communities with stops and depots on the rail lines began to assume a greater importance than the small communities away from the lines. The impact of the railroads on the small communities can be seen from the following description of Central City:

> By the year 1863, the City...was a bustling, urban center. Early accounts tell us that, at that time, the City included eleven churches, five hotels, two flouring mills, three tanneries, two breweries, three saw mills, two sash and blind factories, three iron foundries, two printing offices, several brick yards, and a large number of mechanic shops.*

Although growing, it should be noted that manufacturing was still minimal. Exports were dominated by agricultural and timber products, and most other production was for local consumption only.

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*Tri-County Regional Commission, "History of the Tri-County Region," Information Report 7, updated. pp. 24-25.

Beginning in perhaps 1880, factories producing goods to be exported out of the region were built in the area, fostered by the completion of railroad ties with the rest of the country. These factories, mainly built near railroad depots, stimulated the migration of factory-worker families into the region. Most of these families settled near the factories where they were employed, adding further to the growth of the towns near the railroad. Just before the turn of the century the introduction of the automobile industry into Central City gave the final impetus needed to make Central City into the dominant community in the County. Beginning about the same time, electric interurban railways were extended from Central City to the north, east and west, allowing many workers from the new industries in the City to move further away from their place of employment.

By the 1920's, automobiles had become readily available and their use was encouraged by the paving of most of the roads in the County. Those who had formerly lived fairly close to the interurban system began to be dispersed throughout larger areas and to settle in lower density neighborhoods. Until about 1930, most new development was found in the filling-in of the Central City and Suburb. Although the growth of industrial and bureaucratic functions proceeded in the Central City and the area adjacent to it, the more outlying townships remained, and to some extent still remain, predominantly agricultural. The growing urbanization which has occurred more recently in these fringe areas has been primarily stimulated by the construction of the interstate expressway system beginning in the 1950's.

The interstate highway freeway system in APEX County is shown on the map at the end of this chapter. One major expressway comes from the southeast, sweeps around the southern and western fringes of the City and leaves the County from its northwestern corner. A second expressway comes up from the south, intersects the first and continues northward into the Suburb. It is anticipated that in the future this expressway will be continued northwards, then swing west to finish an expressway loop around the City (dashed line).

In addition to the airport, major transportation into and out of APEX County is provided by rail (primarily freight) and expressway. The attached map outlines the routes of the three rail lines, which generally follow the river valleys and intersect in Analysis Area 8.

A local APEX bus line serves the Central City, with some service extended into the Suburb and nearby areas of the County.

Most travel in APEX is currently by private automobile. There are approximately 2.1 people per registered automobile in APEX. This amounts to approximately one billion automobile miles per year. The automobile is the cause of substantial congestion, property damage, death and air pollution in APEX. Further information about the contribution of the automobile to pollution can be obtained from the Air Pollution Control Officer.

The automobile represents an immense financial burden to owners, political jurisdictions, employers and commercial establishments. Taxes to expand and maintain the road network are constantly expanding. Vast areas of land are required for parking. At the same time, bus ridership is decreasing.

Political Jurisdictions

In the METRO-APEX game, the County is composed of four autonomous jurisdictions: The Central City, Suburb, Township 1 and Township 2. The County has been further divided into 29 "Analysis Areas", each resembling a census tract. The Central City comprises Analysis Areas 1 through 13; the Suburb, AA's 17 through 19; Township 1, to the west, contains AA's 23 through 28 and Township 2, to the east, contains AA's 14-16, 20-22 and 29. (See map). In addition to analysis areas, the Central City is politically divided into Wards:

Ward 1 -- AA's 1-4
Ward 2 -- AA's 5-8
Ward 3 -- AA's 9-13

Each Ward is the electoral district for one of the three City Council seats represented in the game. The County government (Board of Supervisors) is comprised of members elected from the Suburb, from the Townships, from the County-at-large and the Central City-at-large.

The City Council and County Board of Supervisors are the only two local governmental units actively represented in the game. Other local governments, including the school boards, are simulated. In some cases, City and County governments have parallel functions; e.g. they both provide police services, planning and capital improvements. The County however, has area-wide responsibility for three major services not provided by the City government: public health, welfare and pollution control. In these three areas, County actions, directly affect Central City residents as well as residents in the outlying areas. Both the municipal and County governments derive their primary financial support from the same tax base--real property. County property taxes are paid by land-owners, in addition to property taxes collected by the municipal government and the school board in each political jurisdiction.

Data provided to players in the game are nearly always given by analysis area--this is also the smallest unit of scale in referring to locations; that is, a project or house or industry is located in "Analysis Area X" rather than on a particular street or a particular intersection. Characteristics of each individual analysis area, including the socio-economic composition of the residents and the proportions of land area devoted to particular land uses, may be found in the Planners data.

A few analysis areas are almost completely chacterized by one or two major features which are often referred to throughout play. These major features are given in the following list, with their analysis areas indicated:

Central Business District (CBD) -- nearly all of Analysis Area 8

State Capitol -- Analysis Area 8

Ghetto -- Analysis Area 4 and Analysis Area 8

University -- Analysis Area 19 (all)

"Best" residential areas -- Analysis Areas 9 (all) and 17 (most)

These features are not only unique in the County, but they also dominate the analysis areas in which they are located; in the game they are likely to be referred to as locations in themselves, with no further locational explanation given.

A list of other important man-made features of the County, and their locations, is given later in this chapter.

Geography and Climate

APEX County is located nearly at the center of an industrialized northern State, some 85 miles northwest of one of the largest metropolitan areas in the United States. The once heavily forested land, extending roughly 320 square miles, is quite flat and for the most part adequately drained for agriculture.

The Great River, a major watercourse in the State, enters the County from the south in Analysis Area 23, meanders north and west, then back to the east and north as it passes through Analysis Area 8. There it is joined by the Red Oak River, which comes in from the east. The enlarged Great River exits from the County in Analysis Area 26, from which it continues west for some 85 miles before emptying in to the Great Lakes. Major drainage of the County is through the Great River system.

Just before it empties into the Great River, the Red Oak River is joined by Sycamore Creek, which wanders up from the southeast. Much of the area in Analysis Areas 11 and 13, near this creek, is low and somewhat marshy, not ideal for heavy development. The other major marshy area in the County is in Analysis Area 14, to the northeast in Township 2. There are also several small lakes in this analysis area and quite a large State Park. The largest lake

in the County is located in Analysis Area 16. This was a primary recreation area in the early part of this century but is less ideal now, due to heavy pollution loads and deteriorating shoreline development. There are small creeks which wander through many analysis areas in the County. The only other river of any significant size, however, is Looking Glass River, which runs east and west through the northern portion of the County, primarily in Analysis Areas 28 and 29.

The climate of APEX County is temperate, with summer temperatures averaging about 70 degrees and winter temperatures which average about 25 degrees. There is an annual rainfall of roughly 41 inches, with heavy snows to be expected primarily in the months of January and February. Prevailing winds are westerly, swinging to the southwest in summer and northwest in winter.

Major Public Facilities

As might be expected, the Central City and Suburb are significantly better endowed with public capital improvements than are the Townships. The following list includes the most important public structures in the County, and indicates under whose jurisdiction they are operated and where they are located:

Airport (County) -- AA 29, just outside the City limits. The Airport has three runways and a terminal of 27,000 square feet. Two commercial airlines serve the County through this airport; cargo and general aviation are also served.

Boys Training School (State) -- AA 7.

City Hall -- AA 6. This is an old structure, built 80 years ago and considered a scandal. A more central location has been chosen for the new City Hall under construction in AA 8.

Community Centers (City) -- AA's 2, 4, 7, 8, 10, 13. These are mostly old houses purchased by the City to house neighborhood meetings and the operation of special programs.

Community Centers (Township Halls) -- AA's 14 (2), 24, 27, 29.

Community College (County) -- AA 8. The facility is currently housed in an old library and elementary school.

County Building -- AA 8, This includes all County offices and the meeting rooms for the County Board of Supervisors.

County Court House -- AA 8, adjacent to County offices.

Fire Stations (City) -- AA's 2, 3, 4, 5, 6, 8 (2), 11, 12.

Fire Stations (Townships) -- AA's 20, 23, 25. These are modest stations housing limited equipment. Volunteers provide firefighting manpower.

Hospital (County) -- AA 7. This was built in 1912 and was expanded in 1922, 1942, and 1960. It contains 362 beds, including a 35-bed tuberculosis wing, and caters primarily to the indigent. There are three private hospitals in the County with an additional 650 beds.

Library (City) -- AA 8. This is an old downtown building. There are branch libraries in AA's 1, 5, 11, 12 (2), 13.

Library (Suburb) -- AA 18.

Sewage Treatment Plant (City) -- AA 2. This plant provides both primary and secondary treatment and has a capacity of 34 million gallons per day. It currently averages 22 million gallons daily.

Sewage Treatment Plant (Suburb) -- AA 19. This plant provides primary sewage treatment, with a capacity of 12 million gallons per day; it currently handels an average of 6.75 million gallons daily.

Sheriff Station (County) -- AA 8. This is attached to the County Building.

Water Treatment Plant (City) -- AA 8. Water for the City is derived from the Great River as it exits from Analysis Area 8. Capacity is 42 million gallons per day, with the average daily flow currently being 22 million gallons. Treatment includes filtration, purification, flouridation and lime softening.

Water Treatment Plant (Suburb) -- AA 19. The Suburb's water is drawn from the Red Oak River as it enters AA 19. Capacity is 6 million gallons daily,

with current average flow being 2.5 million gallons per day. Treatment includes chlorination, fluoridation and ziolite softening.

Zoo (City) -- AA 7.

Industry and the Economy

Major employment in APEX County is provided by the State Capitol Complex, the University and a automobile assembly plant, located in Analysis Area 4. While State Government is a stable, slow-growing industry, the University, typical of "research and development" operations elsewhere, is growing at a very rapid rate. The automobile plant exhibits characteristics similar to any large manufacturing operation, fluctuating considerably in response to the national business cycle.

In addition to these "big three" employers, there is a host of industries supplying parts to the automobile industry, as well as independent industries exporting goods which have no relationship to autos. (A map and listing of the major industries in the County are found on the following two pages.) These include the seven gamed industries:

Industry 1 -- Shear Power Company
Industry 2 -- People's Pulp Plant
Industry 3 -- Rusty's Iron Foundry
Industry 4 -- Gestalt Malt Brewery
Industry 4 -- Caesar's Rendering Plant
Industry 6 -- Dusty Rhodes Cement
Industry 7 -- Schick Cannery

Members of the population of APEX County constitute a work force of about 101,000 people, nearly half of them employed by the major "exporting" industries previously mentioned. About 9% of total County employment is found in lighter industry and 41% in commercial and service activities for the resident population. The greatest concentration of manufacturing employment is, as expected, found in the Central City. The highest proportion of white collar workers is in the Suburb, due to the predominance of the University as an employer there. In the futute, it is probable that more and more new industrial growth and employment will occur in outlying areas, particularly among firms requiring significant amounts of land for their plants.

Population

Within the physical and political environment described in the

preceding pages resides a population of some 227,000 persons, a tiny fraction of whom are represented in METRO-APEX as players. The remainder of the population is simulated by the computer in the game. About 63% of the population resides in the Central City, 10% in the Suburb and the remainder in the two Townships.

Only about 9.2% of the County's population is black; however, virtually all of this population is found in the Central City, of which 14.4% of the total population is black, primarily in Ward 1, where the number of non-white households approaches 38%. The only other significant ethnic minority is found in a Mexican-American community in the east-central portion of the city.

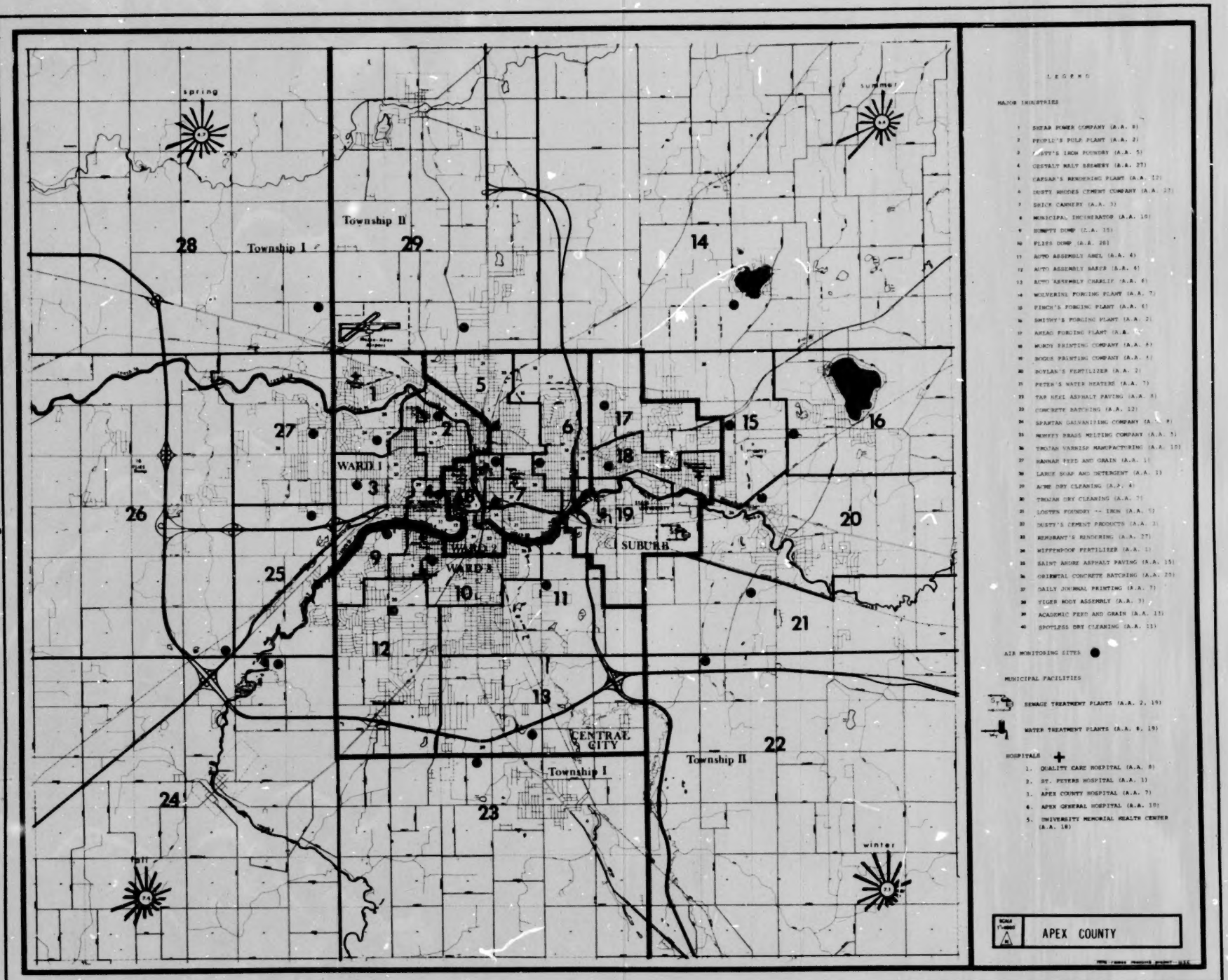
For purposes of the game, the population of APEX County has been divided into five "household types", each representing different occupations and educational achievements, life-styles, voting habits and consumption behavior. These will be described briefly here; more detailed information about each may be found in the Glossary.

Household type 1 is a combination of upper and upper-middle class families whose head of household are likely to be employed in the professions and business management. Household type 2 is typical middle class, occupations usually clerical and lower-level public service areas. Household type 3 includes very low white-collar workers and skilled craftsmen and shop foremen, the latter two predominately. While members of household types 1 and 2 have attended college, some with advanced degrees, household type 3 members are typically high school graduates. In outlying areas, farmers are included in this latter type. In household type 4 are found semi-skilled workers and non-domestic service workers. Usually household heads have not completed high school, and while many household type 4's are homeowners, the value of their housing is quite low. Household type 5 includes laborers, domestic workers and the unemployed, with a large number of the elderly. A majority of these households live in rental units of low value.

Initially, about 17.5% of the County population is found in household type 1, 16% in household type 2 and 27% in type 3; about 32% is of household type 4 and 7.5% fall into household type 5. The household composition of a particular analysis area, and of an entire jurisdiction, will affect significantly the demand for both public and private goods and services. It will also affect voting behavior on financial issues and in elections.

List of Major Industries

1. Shear Power Company (A.A. 8)
2. People's Pult Plant (A.A. 2)
3. Rusty's Iron Foundry (A.A. 5)
4. Gestalt Malt Brewery (A.A. 27)
5. Caesar's Rendering Plant (A.A. 12)
6. Dusty Rhodes Cement Company (A.A. 23)
7. Schick Cannery (A.A. 3)
8. Municipal Incinerator (A.A. 10)
9. Humpty Dump (A.A. 15)
10. Flies Dump (A.A. 26)
11. Auto Assembly Abel (A.A. 4)
12. Auto Assembly Baker (A.A. 4)
13. Auto Assembly Charlie (A.A. 6)
14. Wolverine Forging Plant (A.A. 7)
15. Finch's Forging Plant (A.A. 6)
16. Smithy's Forging Plant (A.A. 2)
17. Ahead Forging Plant (A.A. 6)
18. Wordy Printing Company (A.A.6)
19. Bogus Printing Company (A.A. 6)
20. Boylan's Fertilizer (A.A. 2)
21. Peter's Water Heaters (A.A. 7)
22. Tar Heel Asphalt Paving (A.A. 8)
23. Concrete Batching (A.A. 12)
24. Spartan Galvanizing Company (A.A. 8)
25. Monkey Brass Melting Company (A.A. 5)
26. Trojan Varnish Manufacturing (A.A. 10)
27. Hannah Feed and Grain (A.A. 1)
28. LaRue Soap and Detergent (A.A. 1)
29. Acme Dry Cleaning (A.A. 4)
30 Trojan Dry Cleaning (A.A. 7)
31. Losten Foundry -- Iron (A.A. 5)
32. Dusty's Cement Products (A.A. 3)
33. Rembrants Rendering (A.A. 27)
34. Wiffenpoof Fertilizer (A.A. 1)
35. Saint Andre Asphalt Paving (A.A. 15)
36. Oriental Concrete Batching (A.A. 20)
37. Daily Journal Printing (A.A. 7)
38. Tiger Body Assembly (A.A. 3)
39. Academic Feed and Grain (A.A. 13)
40. Spotless Dry Cleaning (A.A. 11)



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CHAPTER 2

Glossary and Reference Terms

Chapter 2

GLOSSARY AND REFERENCE TERMS

ABATEMENT

Abatement is the reduction of pollutant emissions from a source or sources.

AEROBIC

A process taking place in the presence of oxygen; or a state of liquid containing free dissolved oxygen.

AIR POLLUTION

Air pollution is the presence in the outdoor air of substances which, when present in a sufficient quantity or over a period of time, can cause an undesirable effect upon man, property, or the environment.

AIR POLLUTION REGULATIONS

Air pollution regulations are legal constraints on pollutant emissions, production processes, or control systems. State regulations and County regulations are enforceable by legal sanctions, while recommendations are not.

AIR QUALITY (See NATIONAL AMBIENT AIR QUALITY STANDARDS)

Air quality refers to the pollution concentration characteristics of the atmosphere or ambient air in a given area. It is usually stated in terms of the levels of concentration of specific pollutants, in micrograms of pollutant per cubic meter of air (Mgm/m3) (See CONCENTRATION).

Air Quality Goals are expressions of desirable maximum pollutant concentrations to be achieved through a pollution control program.

Air Quality Criteria - The basic medical and technical information which forms the rationalization from which Air Quality Standards are set. This information is published for each major pollutant by EPA in Air Quality Criteria Documents.

Air Quality Standards are quantitatively-specified maximum levels of pollutant concentrations or dosages, as more precise statements of air quality goals.

AIR QUALITY CONTROL REGION

One of the approximately 250 geographic areas covering the United States which form the basic units for air pollution control activities. These areas were designated by EPA (with the states) and are based on considerations of climate, meteorology, topography, urbanization and other factors affecting air quality.

ALERT STAGES

Alert Stages refer to critical levels of concentration or dosage signaling potential disastrous pollution effects and requiring emergency abatement and control measures.

ANAEROBIC

A process taking place in the absence of oxygen; or a state of liquid containing no free dissolved oxygen.

ANALYSIS AREA (A.A.)

Analysis areas are used as the primary areal reference units for the data and issues throughout the game. The County is divided into a number of analysis areas, each of which is the approximate size of several census tracts. The analysis areas included in the five jurisdictions are as follows:

Jurisdiction 1-- Central City: Ward 1 = AA 1 through AA 4
Ward 2 = AA 5 through AA 8
Ward 3 = AA 9 through AA 13

Jurisdiction 2-- Suburb: AA 17 through AA 19

Jurisdiction 3-- Township 1: AA 23 through AA 28

Jurisdiction 4-- Township 2: AA's 14-16, 20-22, 29

Jurisdiction 5-- County: AA's 1-29

See APEX Analysis Area Map

ANNUAL WAGE

This is the annual cost to the Industrialist of one worker and is an average of the various rates of pay applicable to the different types of workers in the firm. The applicable average wage rate for each firm is reported in the Industrialist's printout each cycle under cost factors. This wage rate may be subject to negotiations with the labor representative and this new negotiated wage rate will supercede the rate found under cost factors on his printout.

ASSESSED VALUE

Assessed value is the value assigned to real estate property for purposes of assessing taxes owed to each of the jurisdiction County and school districts. Governments are required by law to maintain an assessed value of 50% of market value for propert in their jurisdiction, although this requirement is often not met. (E.g. if a residential property is valued on the market at $20,000, its assessed value is $10,000.) (See STATE EQUALIZED VALUE.)

BACKGROUND LEVEL

The amount of pollutants due to natural sources such as marsh, gas, pollen, conifer hydrocarbons and dust.

BOARD OF DIRECTORS

Each Industrialist acts as a Plant Manager and is responsible to the Board of Directors of his plant for his decisions and actions. The Board has the ultimate decision-making power in plant affairs and may approve, amend or reject the manager's fiscal policy proposal. The Board also sets the amount of dividends to be paid to the stockholders.

BONDING

Bonding is the process of incurring public debt to finance some capital improvement project. It is a device used to extend the incidence of costs over a long period of time, rather than have costs met out of current revenues while the project is under construction. Politicians may issue two kinds of bonds general obligation bonds and revenue bonds. These differ in three respects: (1) the need for voter concurrence, (2) how they are paid off, and (3) the kinds of projects for which they are appropriate. Before Politicians may float general obligatic bonds to finance projects, voters must approve this action in a referendum. There is a State-imposed limit on the indebtednes that a jurisdiction may incur through general obligation bonds. The amount of additional bonded indebtedness that can be sought is indicated in the Politician's output as "$ Limit on Next G.O. Bond Sought". (See DEBT RETIREMENT for the process of financing general obligation bonds.)

Revenue bonds are not submitted to a referendum and are appropr iate only for particular projects. (Projects for which they may be used are noted in the Project List.) They are paid off thro fees collected for the service provided by the facility, rather than by taxes.

CAPITAL PLANT INDEX (C.P.I.)

The capital plant index is a ratio of the present dollar value of public capital facilities (sewers, water lines, streets, parks and miscellaneous public holdings) to population equivalents. This number reflects the load imposed on facilities by residents, employees and clients, and this is considered an indication of the relative level of adequacy of these facilites. Present dollar value is calculated each cycle on the basis of depreciated value of existing facilities plus new facilites. (Facilities depreciate at about 5% of original value per year.) (See POPULATION EQUIVALENT.)

CASH CARRYOVER

This is the cash reserve which an Industrialist or Developer carries over to the next cycle after making all his expenditure including those for capital plant. It represents uncommited funds, which the player is free to use in the next cycle.

CASH TRANSFER

A cash transfer is used for loans or gifts of cash between players when the reason for the exchange is unspecified. Revenues made, or expenditures incurred, through an exchange of cash between either the Government, Industrialist, or Developer, are recorded in the budget section of their printout. When applicable, cash transfers are also used to cover the cost of television time and newspaper articles.

CLEAN AIR ACT AMENDMENTS OF 1970

(See LEGAL REFERENCE MANUAL.)

COLLECTION/DISPOSAL STUDY

Studies of municipal house-to-house refuse collection using combinations of different truck types, crew sizes, container locations, transfer stations and disposal sites to determine the capital and operating costs of alternative systems.

COLLOIDAL PARTICLES

Very fine particles of material in fluid suspension; particles will not settle out and can pass through a semipermeable membra

COMBUSTION

Combustion is the process of burning.

CONCENTRATION

Concentration is the ratio of pollutants to effluent gases or ambient air, measured in micrograms per cubic meter (MG/cubic meter) as a weight to volume ratio. Data on mean concentration per quarter, concentration on worst day, and number of days above a specified concentration can be obtained by the APCO, through the installation and operation of monitoring stations.

CONTAMINANT

(See POLLUTANT)

CONTROL EFFICIENCY

Control efficiency refers to the ratio of the amount of a pollutant removed from effluent gases by a control device to the total amount of pollutant without control.

CONTROL STRATEGY

A comprehensive plan designed to control or reduce the level of a pollutant or pollutants in the environment.

CONTROL SYSTEM

Control system refers to equipment and/or procedures intended to reduce the amount of a pollutant, or pollutants, in effluent gases. Each gamed industrial firm has a limited set of control system options for each production process and combustion proces

DEBT RETIREMENT (Debt Service)

Debt retirement, or debt service, is a term used to describe the process of paying off long-term general obligation bonds sold by public agencies. Debt retirement is a budget category of the Politician which includes expenditures for both principal and interest on general obligation bonds. Financing of these expenditures may be with either normal millage or debt retiremen millage.

DEMOLITION COSTS (Clearance Costs)

A demolition cost of 5% of the assessed value of developed PROPERTY must be paid when developed land is rezoned.

DENSITY

In residential areas, density is the term used to express the number of dwelling units per acre of land. In APEX County a different densit, is associated with each of the five residentia

development types, with the lowest density found in land use category R-1 and the highest in category M-2.

The table on the following page expresses housing density in housing units per acre, and in acres per housing unit.

DEPRECIATION ALLOWANCE

Each cycle, the total value of industrial capital facilities, (building and equipment) depreciates at 8%. A tax credit of 5% of the capital value of these facilities is allowed the Industrialist to compensate for this depreciation. The amount is deducted before Federal and State income taxes are paid. The Industrialist may claim any part of his maximum allowance; any portion of the allowance not taken will accumulate. The maximum depreciation allowance is listed under cost factors in the Industrialist's printout.

DEVELOPMENT TYPES AND COSTS

A. Residential

In APEX County there are various levels of cost and density associated with different qualities and sizes of housing which may be built by Developers. These costs are for structures, exclusive of land and site improvements.

Single Family

Three different development-cost levels are applicable to APEX County single-family housing units, ranging from the highest construction cost of $40,000 (designated as R-1) to the lowest cost housing, built at $15,000 per unit (designated as R-3). Any one of these types may be built on land which, when vacant, is zoned R.

Multiple Family

Units of two different cost levels, M-1 and M-2 are available for construction of multi-family housing in APEX County. The highest cost per unit, for M-1, is $30,000 and the lowest, for M-2, is $12,000. Either of these types may be constructed on vacant land zoned M.

Residential Development Costs Per Unit

R-1	R-2	R-3	M-1	M-2
$40,000	$22,500	$15,000	$30,000	$12,000

HOUSING DENSITY

AA	R-1		R-2		R-3		M-1		M-2	
	Units Per Acre	Acres Per Unit	Units Per Acre	Acres Per Unit	Units Per Acre	Acres Per Unit	Units Per Acre	Acres Per Unit	Units Per Acre	Acres Per Unit
1	1.4	.714	3.5	.286	5.6	.179	11.2	.089	21.0	.048
2	2.4	.410	6.0	.167	9.6	.104	19.2	.052	36.0	.028
3	2.0	.500	5.0	.200	8.0	.125	16.0	.063	30.0	.033
4	2.8	.357	7.0	.143	11.2	.089	22.4	.045	42.0	.024
5	2.1	.476	5.25	.190	8.4	.119	16.8	.060	31.5	.032
6	1.6	.625	4.0	.250	6.4	.156	12.8	.078	24.0	.042
7	2.5	.400	6.25	.160	10.0	.100	20.0	.050	37.5	.027
8	3.0	.333	7.5	.133	12.0	.083	24.0	.042	45.0	.022
9	1.2	.833	3.0	.333	4.8	.208	9.6	.104	18.0	.056
10	2.5	.400	6.25	.160	10.0	.100	20.0	.050	37.5	.027
11	1.0	1.000	2.5	.400	4.0	.250	8.0	.125	15.0	.067
12	1.0	1.000	2.5	.400	4.0	.250	8.0	.125	15.0	.067
13	1.0	1.000	2.5	.400	4.0	.250	8.0	.125	15.0	.067
14	.5	2.000	1.25	.800	2.0	.500	4.0	.250	7.5	.133
15	.6	1.667	1.5	.667	2.4	.417	4.8	.208	9.0	.111
16	.8	1.250	2.0	.500	3.2	.313	6.4	.156	12.0	.083
17	1.2	.833	3.0	.333	4.8	.208	9.6	.104	18.0	.056
18	2.3	.435	5.75	.174	9.2	.109	18.4	.054	34.5	.029
19	3.0	.333	7.5	.133	12.0	.083	24.0	.042	45.0	.022
20	.8	1.250	2.0	.500	3.2	.313	6.4	.156	12.0	.083
21	.5	2.000	1.25	.800	2.0	.500	4.0	.250	7.5	.133
22	.4	2.500	1.0	1.000	1.6	.625	3.2	.313	6.0	.167
23	.7	1.429	1.75	.571	2.8	.357	5.6	.179	10.5	.095
24	.3	3.333	.75	1.333	1.2	.833	2.4	.417	4.5	.222
25	.4	2.500	1.0	1.000	1.6	.625	3.2	.313	6.0	.167
26	.3	3.333	.75	1.333	1.2	.833	2.4	.417	4.5	.222
27	.6	1.667	1.5	.667	2.4	.417	4.8	.208	9.0	.111
28	.3	3.333	.75	1.333	1.2	.833	2.4	.417	4.5	.222
29	.5	2.000	1.25	.800	2.0	.500	4.0	.250	7.5	.133

B. Commercial

Two types of commercial land use are allowable in APEX County. These relate to local neighborhood shopping facilities and to regionally-oriented commercial and service facilities. Both may be built only on zoning category "Commercial" land. Each is developed on a cost-per-acre basis, as follows:

Commercial Development Costs by Type

CL	CR
$100,000	$125,000

C. Industrial

Endogenous industrial development permitted Developers in APEX County is on a per-acre basis, the cost being $100,000 per acre. Zoning category I land may be developed into this land use.

(See ZONING CATEGORY.)

DOSAGE

The accumulated exposure of a person, plant, materials, etc., to a particular concentration of pollutant for a specified period of time.

DUMP

A site where uncontrolled disposal of solid waste occurs.

EFFLUENT

An effluent is a gaseous or liquid discharge or emission.

EFFLUENT SAMPLES

An effluent sample is an industrial outflow water sample and analysis which provides data on seven water pollutant parameters. A sample may be ordered by the Water Quality Manager and is taken at the source specified by the WQM.

ELITE OPINION POLL (E.O.P.)

The Elite Opinion Poll calls for a vote of all game players on certain major policy issues in the community. These issues appear as headlines in the METRO-APEX NEWS, which ask for either a deciding or advisory vote. The results of the Poll affect public officials' chances of reelection, as well as the probability of passage of general referenda, specific bond issues and special millage requests.

EMERGENCY EPISODE

An air pollution incident in which high concentration of pollutant(s) occur in the ambient air contributing to a significant increase in illness or death.

EMISSIONS

Emissions are pollutants in effluent or exhaust gases which are released into the air.

EMISSION FACTORS

Emission factors are estimates which can be used to approximate the rate of emissions of specific pollutants from generalized sources.

EMISSION INVENTORY

A compilation of the rate of pollution emissions in a given area by source type.

EMISSION MEASUREMENT

Air pollution emissions are measured in pounds per hour for particulates, sulfur dioxide (SO2), carbon monoxide (CO), nitrogen oxides (NOx), and hydrocarbons (HC); in Ringelmann number for smoke; and in Stinkelmann number for odor. The emissions measured are of specific pollutants from specific sources.

EMISSION RATE

Emission rate refers to the amount of pollutant emitted per unit of time or throughput. Maximum allowable emissions will be specified in pounds per hour (or pounds per 1000 pounds of process rate) if they refer to emission rates.

EMISSIONS SOURCE

An emission source is the origin of some specific air pollutants. In the game there are several gamed point sources, about thirty non-gamed point sources, plus motor vehicles and space heating as line and area sources, respectively.

ENVIRONMENTAL IMPACT STATEMENT

The results of a study which identifies and evaluates the adverse or beneficial environmental effects of pursuing a proposed action, pursuing an alternative action or not pursuing the proposed action.

EXOFIRM (EXOGENOUS FIRM)

An Exofirm is an industry or bureaucratic firm that depends primarily upon markets outside the local area for its growth and vitality. These firms are usually classified as Exofirms on the basis of their being net importers of dollars and net exporters of products or services to these outside markets. Jobs created by Exofirm growth spur additional growth of households and jobs oriented to the local market. (Exofirms are also often referred to as basic firms).
In APEX County, Exofirms locate in industrial and office zoning categories. Periodically, the newspaper will note the opportunity for Developers or Industrialists to invest, in a speculative way, in the entry of new Exofirms into the metropolitan area, with a variable probability of success attached to such investments. Occasionally, these Exofirms require rezoning of land and/or installation of special capital improvements. Requirements for such special public action and requests for private investment will be noted in the newspaper announcement of the firm's interest in locating in the area.

FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972

(See LEGAL REFERENCE MANUAL)

FUEL RATE

The amount of fuel consumed by each industry per unit of time is specified in tons/hours for coal, in barrels (bbl)/hour for oil, in thousand cubic feed (MCF)/hour for natural gas, and in megawatts (MW) for electricity.

FUEL TYPE

The fuel types for industry include: low-grade coal (Lo-Coal), high-grade coal (Hi-Coal), low grade oil (Lo-Oil), high-grade oil (Hi-Oil), natural gas, and electricity. The fuel option for each plant is listed in the Industrialist's printout. The fuel grade refers inversely to the air pollution potential of the burining fuel, i.e., Lo-Grade has higher pollution potential, and Hi-Grade fuels have low pollution potential.

GARBAGE

The food waste portion of solid waste.

HAZARDOUS AIR POLLUTANTS

Air pollutants not covered by the Air Quality Standards but which, in EPA's judgement, "may cause, or contribute to, an increase in mortality or --- serious illness." These pollutants generally are toxic substances such as mercury, cadmium, asbestos and beryllium.

HAZARDOUS WASTE

(See "SOLID WASTE TYPE")

HOUSEHOLD/COMMERCIAL REFUSE

(See "SOLID WASTE TYPE")

HOUSEHOLD TYPES

The five household types used in APEX County are characterizations of families belonging to fairly homogeneous socio-economic groups. These characterizations reflect life style, political involvement and voting habits, general consumption behavior and preference for public goods. There is substantial overlap of income levels for all status groupings; hence income, alone, is a weak indicator for characterizing households.

Household Type 1 -- is upper class and upper-middle class combined. Occupations of the heads of households are: professionals, technical workers, managers, officials, and proprietors. One-half of the family income levels are in excess of $15,000 and the other half are in the $10,000-$15,000 range. Value of housing is in excess of $20,000, and if they rent, rentals are over $150 per month. This is the group which is most concentrated in residential locations. Education of the head of the household is at least college graduate, often with post-graduate study. Interest group membership for this household type is found in the Business Community and Effective Government Groups.

Household Type II -- is the typical middle-class household in which the head of households occupation is clerical, sales, or kindred types. Income of the family is primarily in the $7,000-$10,000 range. Education of the head of the household is some college or at least high school graduation.

Housing value is primarily in the $15,000-$25,000 range, and gross rentals would usually be from $100 to $149 per month, though they may be somewhat lower. Interest group affiliations for this type are with the Effective Government Groups on the one hand, and with the Right-wing Conservatives on the other.

Household Type III -- the most numerous and widely-distributed of the five types is characterized by a mixed membership of very low income white collar workers, skilled craftsmen, and foremen, though the latter two predominate. In the outlying areas, farmers fall into this category. Family income is primarily in the $5,000-$9,000 range. The head of the household's education is typically high school graduation. Housing value is usually in the $12,000-$20,000 range and rentals are from $80-$125 per month. Members of this group are apt to belong to the Labor Vote and/or the Right-wing Conservative interest groups.

Household Type IV -- is composed of semi-skilled workers, industry operatives and non-household service workers, such as waiters, barbers and parking-lot attendants. Family income is in the lower portion of the $4,000-$7,000 range. Housing values range from $10,000 to $14,000 with gross rentals being $70 to $90 per month. Education of the head of the household is usually 9 to 11 years. Interest group membership for this household type is found in the Labor Vote and among the Civil Rights Groups.

Household Type V -- is the lowest stratum of society, and heads of households are laborers or household service workers. The vast majority of the area's unemployment are of this type and roughly half of all members are elderly and retired. Family income is less than $5,000 annually and the value of housing is less than $10,000, with rentals primarily $50-$75 per month. Heads of households have usually not been educated beyond the eigth grade. Membership in interest groups is found in the Labor Vote and Civil Rights Groups.

Political involvement of the five household types declines from Type I (the highest) to Type V, the latter being generally apathetic. Likewise, concern with government operation and provision of public services is highest in Type I households and declines steadily through Type V families.

The five household types will tend to demand housing of the five residential development types according to the following percentages:

Household Type I -- 50% will choose R-1; 30% R-2 and 20% M-1

Household Type II -- 20% will choose housing in each of the five development types

Household Type III -- 10% prefer R-1; 30% prefer R-2; 20% choose R-3; 25% take M-1, and 15% M-2

Household Type IV -- 20% will choose R-2; 40% R-3; 10% M-1, and 30% M-2

Household Type V -- 40% will be in R-3; 60% in M-2

IMPLEMENTATION PLAN

Under the 1970 Clean Air Act, each state must prepare and have approved by EPA an Implementation Plan which details the methods, strategies and timetable which the state and its jurisdictions will employ to meet and maintain the Air Quality Standards within the control region(s) within its jurisdiction.

IMPROVEMENT COSTS

Improvement costs are fees to prepare raw land for development, including subdivision costs, sewer and water connections, drainage and engineering. Developers are required to pay improvement costs on all land on which they build structures. For residential property, improvement costs are on a per unit basis as follows:

R-1	R-2	R-3	M-1	M-2
$1,000	$800	$700	$600	$400

For commercial and local industrial land uses, improvement costs are on a per acre basis; for each the fee is $5,000 per acre.

These fees are automatically applied to all land on which the Developer builds.

INTEREST GROUPS

In APEX County there are 5 major political interest groups that take stands on public policy issues and have a significant impact upon voting behavior. The more extreme the position assumed by one of these interest groups (as indicated on a scale of +4 to -4), the greater will be the voter turnout surrounding any particular referenda or election. Each of these interest groups derive their constituency from among two or more of the "Household Types" (See HOUSEHOLD TYPES)

1. CIVIL RIGHTS GROUPS: The orientation of these groups is primarily towards issues such as fair employment, neighborhood improvement, and problems that affect minorities. Their leadership is drawn from the elite liberals or the ghetto activists, their membership from the lower social strata. Their mode of operation is typically public protest and demonstrations centered around a very specific policy issue or community problem, and their influence on the system as a whole is moderate.

2. EFFECTIVE GOVERNMENT GROUPS: Are overwhelmingly middle class, composed primarily of professional people, a large percentage of them women. These groups are interested in a wide range of issues, on which they exert moderate influence. their orientation is towards governmental efficiency and towards community growth and image.

3. BUSINESS COMMUNITY: Draws from the whole range of commercial and mercantile interests, as well as some from the professional areas such as law, engineering and medicine. The business community exerts the highest degree of power of all politically oriented interest groups; their interest is directed primarily at community image, growth, and "BOOSTERISM".

4. LABOR VOTE: Are more conservative locally than nationally and exhibit some divergency between craft unions and industrial unions, the former being more conservative. The labor vote exert moderate influence on a range of issues somewhat less broad than those of interest to the "Effective Government Groups". The conservatism of the labor vote is especially apparent in the opposition of some of its constituency to public spending for social welfare.

5. RIGHT-WING CONSERVATIVES: Draws its membership primarily from people who resist change and advocate conserving the "traditions of Americanism--God and Country." They are generally against social change, increases in government influence in local affairs and public spending on social programs. Since these groups do not advocate change, they usually only become actively involved in public issues as a reaction to public programs proposed by other groups.

INTEREST RATE

The cost of borrowing money will vary for the Industrialists and Developers according to both their credit rating and the length of the loan, i.e., how many years will be taken to repay it. The maximum number of years on any loan by an Industrialist or Developer is 20 years. Applicable interest rates as follows:

Years to Repay	Credit Rating A-1	A-2	A-3
1-2	4%	6%	8%
3-5	6%	8%	12%
6-10	8%	12%	16%
11-20	12%	16%	20%

The cost of borrowing money for governmental agencies, the interest rate on bonds, will vary according to the credit rating of the jurisdiction, and will differ between general obligation and revenue bonds. Since revenue bonds are not backed by governmental taxing power they are riskier and therefore carry higher interest rates than general obligation bonds. As a jurisdiction's credit rating falls from A-1 to A-3, the interest rate on general obligation bonds will increase from 4.5% to 6%.

INVERSION

A layer of air trapped near the ground by a layer of warmer air above it.

ISSUE

Issue is used to refer to a problem situation presented to players in the METRO-APEX NEWS. Following each issue are two to four alternatives one of which must be selected by the player.

(See ELITE OPINION POLL)

JURISDICTION

Jurisdiction refers to one of the political units in APEX County. Abbreviations used in the game are:

(Jurisdiction 1) CC - Central City
(Jurisdiction 2) SUB - Suburb
(Jurisdiction 3) TW 1 - Township 1
(Jurisdiction 4) TW 2 - Township 2
(Jurisdiction 5) Co - County

(See ANALYSIS AREA.)

LAND USE

Land use is a term used to refer to the spatial distribution of City and rural functions--its residential communities or living areas, its industrial, commercial and retail business districts or major work areas and its agricultural, institutional and leisure time functions.

(See DEVELOPMENT TYPE and ZONING CATEGORY.)

LEACHATE

Water moving vertically through the soil of a landfill that may become contaiminated from the waste material in the fill.

MAXIMUM PRODUCTION CAPACITY

This is the maximum number of units which can be produced by a gamed industry in a cycle, with the plant and equipment in existence during that cycle. Maximum capacity may be increased by making capital expenditures for building and equipment. New productive capacity becomes available only in the cycle following that in which money is budgeted for plant expansion.

MEAN PROBABLE NUMBER PER 100 ml (MPN/100 ml)

A measure of the amount of coliform organisms per unit volume. By using quantities of sample varying in geometric series i.e., 0.01, 0.1, 1.0 milliliters, and by applying the usual test for coliform organisms, it is possible to determine a statistical estimate or "most probable number" of coliform organisms per 100 ml of water.

MICROGRAMS PER CUBIC METER

The weight of a substance in 1/1,000,000 of a gram contained in one cubic meter of volume.

MILLAGE

Millage is the tax rate, in mills, which is applied to State equalized property value to generate property tax revenue. One mill is equal to a $1 charge on each $1000 of value, or one tenth of one percent of the State equalized value. There are three types of millage:

A. Normal Operating Millage is determined by local Politicians and is applied to standard operating costs of government by State and local law -- the local limit can never be higher than the limit set by the State.

B. Special Millage, which is not subject to State and local limits, can be used for financing special programs. It must be voted and passed on in a referendum.

C. Debt Retirement Millage is not subject to the State and local limits but it can be used for retiring general obligation bonds. This millage requires a favorable vote in a referendum.

Total millage is the sum of operating millage, any special millages and the debt retirement millages which may be in effect during the year.

MILLIGRAMS PER LITER (mg/l)

Weight per unit volume. For water effluents, milligrams per liter is used to express the concentration in terms of the weight in milligrams of a dissolved or suspended pollutant in one liter of water.

MONITORING STATION

A monitoring station is a facility that houses air quality monitoring equipment for measurement of ambient air quality. One air quality monitoring station may be installed and operated in any analysis area. The pollutants measured at each monitoring station are:

Particulates, SO2, CO, NOx, and Hydrocarbons

Each pollutant is measured by a different type of monitoring equipment.

(See AIR QUALITY)

NATIONAL AMBIENT AIR QUALITY STANDARDS

EPA has set Primary and Secondary Air Quality Standards which are the maximum concentration of air pollutants allowable by federal law. Primary Standards are based on protection of the public health and are to be achieved as a first priority. Secondary Standards are based on the public welfare and will be achieved as a second priority.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

(See LEGAL REFERENCE MANUAL)

OFF GASSES

Gasses arising from landfills or other solid waste conversion (such as thermal) operations and leaving the site of generation.

PLANNED UNIT DEVELOPMENT

A planned unit development is an allocation of density to a development site such that the overall density meets the zoning requirements, but within the site certain areas may be of a higher concentration than those other developments around this site. This allows the Developer more flexibility in designing planned neighborhoods.

(See DENSITY)

PLANT INSPECTION

A plant inspection is an "on-site" examination of production and pollution control equipment, processes and procedures. Plant inspections ordered by the APCO will provide him with information on the production processes; production capacity; fuel and process rates; control systems; smoke code (Ringelmann number); and odor code (Stinkelmann number) for each process of a specific gamed or non-gamed emission source.

PLANT MANAGER

The player in the role of Industrialist is acting as a Plant Manager.

(See BOARD OF DIRECTORS.)

POLLUTANTS

Air Pollution:

(1) Particulates: particulate matter is any material (except uncombined water) which exists in a finely divided form as a liquid or solid at standard conditions.

(2) Sulfur Dioxide (SO_2) is a pungent colorless gas which is commonly emitted from the combustion of sulfur containing compounds, especially fuels such as coal and fuel oil. Sulfur dioxide can also be emitted from chemical process plants, metal process plants and trash burning incinerators.

(3) Carbon Monoxide (CO) is a colorless, odorless, very toxic gaseous product of the incomplete combustion of common fuels. It can also be generated by metabolic processes and the partial oxidation of carbon-containing compounds such as limestone. Carbon monoxide adversely affects human respiration by interferring with the body's ability to assimilate oxygen.

(4) Oxides of Nitrogen (NOx) are formed when oxygen and nitrogen are heated to a high temperature. Sufficiently high temperatures to produce significant amounts of NOx are normally only reached in modern efficient combustion processes such as electric power plants and automobile engines. Oxides of nitrogen in combination with hydrocarbons and sunlight are major constituents of photochemical smog.

(5) Hydrocarbons (HC) are compounds containing combinations of hydrogen and carbon. Gaseous hydrocarbon air pollutants are most commonly emitted from the incomplete combusion of fuels such as gasoline, coal, oil and gas from the production, handling and evaporation of gasoline, paint thinners, solvents, etc. Hydrocarbons along with oxides of nitrogen and sunlight are important in the generation of photochemical smog.

Water Pollution:

(1) Biological Oxygen Demand - B.O.D. is the amount of oxygen needed by any polluted water or sewage to allow micro-organizms to consume the suspended and dissolved biodegradable organic material found in the liquid under aerobic conditions.

(2) Coliform Bacteria - Micro-organisms found in sewage serving as the indicator of bacterial contamination in water quality.

(3) Dissolved Oxygen (D.O.) is the amount of oxygen found and available for biochemical activity with a given volume of water (mg./l.). The saturation point is dependent upon temperature, chemical characteristics of the water, and barometric pressure.

(4) Nutrients - Nutrients are phospates, nitrates, nitrogen and phosphorus released as waste from certain industries or produced from agricultural and urban runoff.

(5) Thermal Pollution - The increase in temperature of surface waters as a result of the use of these

waters for cooling purposes by industry or public facilities. The heat accelerates biological processes in the stream, resulting in reduction of oxygen content of the water.

(6) Total Dissolved Solids (T.D.S.) - The amount of solids, dissolved in a given volume of water (mg./l).

POPULATION EQUIVALENT

The population equivalent is a means of converting (a) residents, and (b) employees and clients of industries and commercial facilities into a standard measure of the demand placed on such public capital facilities as sewers, streets, and water supply. The population equivalent of an area (analysis area or jurisdiction) is computed as follows:

P.E.= [Total households]+[.3 x all employees of commerce and industry]

For use of population equivalents in APEX County, see CAPITAL PLANT INDEX.

PROCESS RATE

Process rate refers to the amount of materials processed by an Industrialist per unit time. The measure is specified in tons, pounds, barrels, per minute, per hour, etc.

PRODUCTION LEVEL

This is probably the key item determined by an Industrialist each cycle. It is the number of units of a product his plant will produce in that cycle. The Industrialist is free to set his production at any level he chooses, as long as the figure he sets does not exceed his maximum production capacity.

PRODUCTION PROCESS

A production process is a definable part of the overall production system of a given firm. Each gamed industrial firm may have up to five production processes, while each non-gamed industrial firm is assumed to have only one process.

PROMPT SCRAP

Wastes that are recycled for direct reuse without entering the solid waste stream.

QUASI-PUBLIC LAND

This is land owned by tax-exempt organizations such as churches and fraternal organizations. Such land includes church buildings and schools, cemeteries and such miscellaneous buildings as Elks lodges, etc.

REACH

A reach is a generally homogeneous segment of a river or stream. Often in water quality management typical measurements of water quality from any point in the reach are used as representative of the entire reach.

REFERENDUM

A referendum is a vote of the (simulated) population of a jurisdiction on some issue presented to the people by the Politician. Most usually referenda are called to approve (or reject) a general obligation bond issue or a request for special millage, although they may be called to approve some legislative matter, such as open housing.

REFUSE

A term applied broadly to mixed solid waste including food waste, trash, street sweepings, and non-toxic solid industrial wastes.

REZONING APPLICATION FEE

The rezoning application fee is a charge of $100, which is assessed for each rezoning request submitted by a Developer or Industrialist. It is included in that player's financial statement for the next cycle.

RINGELMANN NUMBER

The Ringelmann Number is a scale for measuring the blackness of smoke fumes and is equivalent to the opacity. Ringelmann Numbers and opacities are used for specifying allowable smoke emissions (Ringelmann for black and opacity for other colors). #0 = zero opacity #1 = 20%, #2 = 40%, #3 = 60%, #4 = 80%, #5 = 100%. In APEX County, all smoke readings are reported as Ringelmann Numbers.

SALVAGE

The recovery for reuse of any valuable component from the solid waste stream.

SANITARY LANDFILL

An operation where solid waste is deposited in the ground in a controlled manner. The waste is compacted when delivered and covered daily. APEX County can have three classes of sanitary land fills. (See below.)

SANITARY LANDFILL--Class I

A site where disposal of toxic or hazardous industrial waste (solid waste type 1) is permitted due to the geology and soil characteristics. Solid waste type 2 and 3 may be deposited in this class site.

SANITARY LANDFILL--Class II

A site where only non-toxic or non-hazardous waste may be deposited. These sites receive primarily mixed municipal refuse (solid waste type 2). Solid waste type 3 may also be deposited in this class site.

SANITARY LANDFILL--Class III

A site where only solid fill (solid waste type 3) may be deposited.

SEWAGE TREATMENT LEVELS

Primary Treatment - A series of mechanical treatment processes including screening and sedimentation, which removes most of the floations and suspended solids found in sewage, but which have a limited effect on colloidal and dissolved material.

Secondary Treatment - A series of biochemical, chemical, and/or mechanical processes which remove, oxidize or stabilize nonsetteable, colloidal, and dissolved organic matter following primary treatment.

Tertiary Treatment - Any sewage treatment process that has the capability to remove over ninty-nine percent of the pollutants in sewage if it follows secondary treatment.

SOIL PERMEABILITY

A measurement of the water porosity of soil; soil porosity measured in gallons per day of water which will be absorbed by one square foot of soil surface.

SOIL SURVEY

An engineering/geological survey of an analysis area which provides data on the water table level, soil type, and soil permeability. These parameters are important criteria to determine the suitability of an A.A. for Class I, II, or III sanitary land fills.

SOIL TYPE

Three predominent soil types are found in APEX County--clay, sand or gravel.

SOLID WASTE

Any waste that can be handled as a solid rather than a liquid.

SOLID WASTE DISPOSAL

The end point of solid waste handling; may include open dumps, sanitary land fills, incinerators, composting, hauling out of APEX County by contract, salvage and recycle, etc.

SOLID WASTE SOURCES

Solid wastes are generated from various sources as --

Household - Solid wastes from residences.

Commercial - Solid wastes derived from non-industrial commercial operation.

Industrial - Wastes produced as a result of manufacturing or related industrial operation.

Municipal - Mixed Household and Commercial waste that may contain some street cleaning wastes and industrial solid wastes.

Agricultural - Wastes derived from basic crop or animal operation including waste vegetables, minerals and animal manure.

SOLID WASTE TYPE

APEX County solid wastes are specified as one of three following types--

S.W. Type 1 - Hazardous Wastes; includes sewage sludge, pesticides, industrial chemicals, etc., (Only small quantities of high toxic wastes and radioactive wastes are generated in APEX County and these are not included in Type 1 wastes.)

S.W. Type 2 - Household/Commercial Refuse; includes trash, rubbish, garbage and decomposable organic refuse from commercial and household operations picked up by regular route collection.

S.W. Type 3 - Solid Fill; includes bulky non-water soluable, non-decomposable inert solids from municipal and industrial operations, demolition, etc. Examples are earth, rock, gravel, concrete, asphalt paving fragments, clay, glass, and rubber products.

Industrial wastes are distributed among the above three categories depending upon the characteristics of the particular waste.

SOURCE TYPES (AIR POLLUTION)

Point Source - A stationary source of pollution which has the potential of emitting a substantial amount of pollutant(s) such as a factory or power plant.

Line Source - A moving source of pollutants such as automobiles, buses, trains, and aircraft.

Area Sources - The sum of numerous widespread small stationary pollution sources as the space heaters in buildings.

Indirect or Complex Source - Stationary facilities or developments which indirectly generate substantial pollution by means of activity associated with them (such as vehicle traffic generated by shopping centers, sports complexes, airports, etc.)

STANDARDS OF PERFORMANCE

Direct limitations of pollutant emissions from certain types of high pollution sources (power plants, etc.) set by EPA and/or the states.

STATE EQUALIZED VALUE

State equalization is a process designed to even out differences in assessment practices among political jurisdictions. The state equalization factor applied to each jurisdiction's assessed value may thus be different. The state equalized value for a jurisdiction, reached by applying the factor to local assessed value, is the base on which millage is levied to generate property tax revenues.

STINKELMANN NUMBER

The Stinkelmann Number is a scale (developed in APEX County) for measuring odor emissions, and for specifying maximum allowable odor emissions. Numbers range from 0-5, covering least to worst odor levels, respectively.

TAX RATE

See MILLAGE

TRANSFER STATION

Site at which wastes are transferred from small compacter vehicles to larger long distance transport vehicles.

TRASH

The non-food, non-putrescible fraction of solid waste.

UNIT COSTS

The costs to the Industrialist of operating his plant are calculated, for each production component, except labor, on the basis of the amount and cost of each component required to produce one unit of the product. These unit costs apply to fuel, administrative overhead, inventory, and raw materials.

Fuel Cost applies to the fuel required to produce each Industrialist's product and will be different for each fuel type.

General Administrative Costs include all overhead expenditures, other than salaries, involved in production.

Inventory Carrying Costs must be paid to store product inventory from one cycle to the next. This cost excludes taxes on inventory.

Materials Costs include all raw materials required to produce the product, except fuel.

The unit costs for each of these components which are applicable for a particular Industrialist for the next year are included in that player's output.

UNIT SALES PRICE

This is the price, which an Industrialist sets each cycle, at which he will sell a unit of his product. Each Industrialist except the power plant has complete control over price; although the number of units he actually sells

will be dependent on the relationship of his price to supply-demand conditions in the general market, and to the current average industry-wide price (reported for the last three years in the Industrialist's output).

WATER QUALITY SAMPLES

A water quality sample is a water sample and analysis providing data on seven water pollutant parameters. The water quality manager may order water samples and designate the location from which they are to be taken.

WATER TABLE LEVEL

The distance from the surface of the ground to the underlying ground water level.

ZONING CATEGORY

Zoning categories apply only to vacant land for APEX County. Each of the six zoning categories may be developed into one or more types of land use:

FROM	TO
Zoning Category	Developed Land use Type(s)
(1) R - Single-family residential	(1) R-1 (low density, high cost) (2) R-2 (med. density, med. cost) (3) R-3 (high density, low cost)
(2) M - Multiple-family residential	(4) M-1 (low density, high cost) (5) M-2 (med. density, low cost)
(3) C - Commercial	(6) CL (Commercial-Local) (7) CR (Commercial-Regional)
(4) I - Industrial	(8) IL (Local industry) (9) IX (Exogenous industry)
(5) O - Office	(10) O (Exogenous office)
(6) A - Agricultural	(11) A (Active farming)

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CHAPTER 3

Role Description

Chapter 3

NEWS MEDIA ROLE DESCRIPTION

1. General Comments

Recent years have brought into being a phenomena that, perhaps more than any other single factor, describes the 20th century; mass media. In most western nations, televisions bring entertainment, information and opinion into a vast majority of households; the world over, radio and printed matter impact on the lives of all men.

In a political system such as found in APEX County, the free and abundant flow of information, as provided by mass media, can be a critically important element in the maintenance of representative government. Voters must know what the issues involve; elected officials must be aware of the variety of needs the citizenry is seeking solutions for; and both must have a channel, a medium that they share and communicate through.

It should also be recognized that valuable ideas are often the product of the "right to criticism", and the prime function of mass media could be to provide a climate of open communication where such a critique can occur.

The role of the News Media in APEX County is similar to that of news agencies found in everyday life. They disseminate information about noteworthy events developing in APEX County, the State and the nation. The information the News Media uncovers and transmits can have a great impact on the direction and progress of the County, yet, as in the real world, the extent of Media impact will hinge on its "credibility" and the "ability to arouse and maintain the interest" of its audience. (See "Evaluation")

2. The Media

Some of the tools at the disposal of the News Media are:

** The METRO-APEX NEWS--a yearly edition of this widely circulated newspaper is generated by the computer. The majority of its content is wire service items handled automatically but the News Media players are welcome to submit additional headlines of local interest.

** The KAPX TELE-NEWS SERVICE--a 5 to 15 minute newscast can be taped for viewing at the onset of the next cycles activities.

** The KAPX RADIO-NEWS SERVICE--as events of critical and immediate importance to the elite of APEX County occur, these may be broadcast in the form of news flashes through the public address system of KAPX radio.

** The NEWS RELEASE BOARD--where possibly a section of blackboard or news-sheet pad may be devoted to succinct statements of interest and importance to the whole community.

** Any other form of mass communications such as a PUBLIC INFORMATION DESK, a COURIER SERVICE to inform selected community leaders, or the organization and moderation of PANEL DISCUSSIONS on selected issues, are available at the discretion of the Media participants.

Each one of these tools has characteristics that affect the practicality of its use. It behooves the News Media to familiarize themselves with the use and applicability of all. (In order to optimize their effectiveness see Chapter 6.)

3. The Message

The number of potentially newsworthy events occuring during any one cycle of activities is immense; each role generates news releases relating to their activities, decisions are taken, deals made, pressures applied and opinions expressed. The simple publication of such an activities list, with the "who, what, when, where, why and how" of each, could require massive amounts of manpower and resources, much beyond the realistic scope of any news agency.

One of the first tasks of the News Media group is to establish the necessary process whereby these massive number of inputs be filtered, condensed and categorized along some scale of signifiance of newsworthy.

4. Internal Organization

We recommend that a clearing point for news items be established, such as a news desk under the charge of a member of the news team. This will provide a central focus through which all news gathering activities can be coordinated as well as giving other players a point at which they can always contact the Media.

Other suggestions in terms of internal organization include:

** Task Specialization by Reporters--This can be defined on the basis of an area of interest such as budgetary process, the business community or citizen's activities. Another way of organizing the tasks could be issue oriented, where one reporter would follow all developments surrounding one problem area such as the environmental quality of APEX County, a movement to develop a County-wide master plan, or the political buildup surrounding up-coming elections.

** The Allocation of Responsibilities in Terms of Handling Gathered Material--Once a story has reached the News Media, it will still often require a certain amount of handling. Very often the text will have to be trimmed and edited, the facts may require confirmation or further investigation, and a decision must be made as to what form of coverage the item should be given (newspaper, radio, television, etc.). This could suggest a "modus operandi" where the news team is broken down into: (1) Reporters, whose scope of coverage would be all activities; (2) Chief Editor, who would coordinate reporters, decide story dissemination and otherwise master-mind media coverage policy; and (3) News Director, who would handle the recruiting, script composition and direct actual dissemination (the taping of video, anchor-man for radio announcements, etc.).

5. Evaluation

Recent years have brought a marked increase in public awareness of the role mass media play in all dimensions of life in the United States. Public opinion surveys try to quantify public reaction to the news media along lines of credibility and impact on social, political and economic trends.

Few agree on what are the best functions for the press to play. Some claim that only the straight forward reporting of the facts is acceptable. Others state that the press has a social and moral responsibility to use the mobilizing power of mass media to push the resolution of issues. From other perspectives, the News Media has, in the past, come under fire for sensationalism or yellow journalism in seeking to boost audience size. Others claim that only through the maintenance of the public's attention can mass media provide even the barest informational role.

Even the ideal of the free press as boldest defender of individual rights could be open to challenge. The ultimate answers must probably come from those individuals whose life the mass media impacts, and the responsible media should be aware and sensitive to its position in the public eye.

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CHAPTER 4

Annotated Worksheet

Chapter 4

ANNOTATED NEWS MEDIA WORKSHEET

The News Media worksheet has two parts: (1) Elite Opinion Poll and (2) Headline Code Sheet. This worksheet will serve as the official record of your agency. At the end of each cycle, these decisions will be transferred to the computer.

I. ELITE OPINION POLL

Each year certain issues will appear in the METRO-APEX NEWS which require decisions from all role players, acting as the "elite" or power structure of the community. In some cases the decision of the elite is binding on the Politicians and the poll can be considered the same as submitting a referendum to the voters. Here the newspaper will read "DECIDED BY OPINION POLL MAJORITY." In other cases, the decision of the elite is merely advisory, and the Politicians can decide whether or not to heed their mandate. Here, the newspaper will read "POLITICIAN'S ULTIMATE DECISION BUT ELITE OPINION SOLICITED."

The outcome of the vote will be recapitulated in the next cycle's newspaper. For each issue outcome, the newspaper will also print the reactions of five interest groups--Civil Rights Groups, Effective Government Groups, the Business Community, the Labor Vote, and Right-Wing Conservatives.

Players should vote on all issues in the Elite Opinion Poll, including those on the Business Page. Each role will have one vote. In the cases where there is more than one person in a role, an agreement must be reached.

The Elite Opinion Poll is especially important to the Politicians because their actions relative to the poll may affect their chances for reelection.

Instructions: Indicate your role and the cycle number at the top of the page. Then put the issue number in the left hand column (this should not be confused with a project number), and the number of the alternative chosen in the adjacent column.

Example:

Issue No.	Alternative
42	2
1	3

II. NEWS HEADLINES

Many different roles will be handing you news releases to be incorporated in next cycle's METRO-APEX NEWS. It will be your job to decide which of these news releases will actually appear in the Newspaper.

Headlines to be added to the newspaper should meet certain criterion:

a) they must be short, succinct and to the point. Each item has to be keypunched onto computer cards.

b) they should hopefully be coded onto the keypunchers form, written in printed capital letters, and tagged with the section number to determine their relative placement in the newspaper. Those numbers describe the following sections:

1 = FOR EDITORIAL OR SPECIAL HEADLINES
These go on the front page, just under the heading METRO-APEX NEWS.

2 = NATIONAL NEWS HEADLINES

3 = STATE NEWS HEADLINES

4 = CENTRAL CITY NEWS

5 = COUNTY-WIDE NEWS ITEMS

6 = SUBURB NEWS

7 = TOWNSHIP 1 NEWS

8 = TOWNSHIP 2 NEWS

9 = THE BUSINESS PAGE

By their nature, the headlines inputed to METRO-APEX NEWS allow the mention of a wide variety of issues with little depth of coverage. More detailed analysis of news items can be achieved using other tools such as the television broadcast.

As each headline in the newspaper is 120 letters long, it will therefore take 2 cards per line to complete a headline. The 1st position of every other line will use one of the nine codes mentioned above.

Instructions: Insert the appropriate code in column 1 of every other line and then insert letters and spaces where appropriate for the news headline. If you should happen to need more space to complete the item, continue on the second line as if it was one continuous line. If additional news headlines are needed, insert the same code on the following line and then continue.

Example: The following news item was received and edited:

> The County Board of Supervisors have voted to adopt the Master Plan for APEX County. Both the Developer's and the Planner's felt the plan was too restrictive for growth in the County. Typically the Industrialists felt the EQA's proposals were too stringent.

```
4The County Board of Supervisor's have voted to adopt the master for APEX County
=--------------------------------------------------------------------------------
  Both the Developer's and the Planner's
----------------------------------------
4felt the plan was too restrictive for growth in the County.  Typically, the Ind
=--------------------------------------------------------------------------------
ustrialists felt the EQA's proposals were
-----------------------------------------
4too stringent.
=--------------------------------------------------------------------------------

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CHAPTER 5

Worksheet

ELITE OPINION POLL

Role_____ Cycle Number_____

Issue No.	Alternative

1 = Editorial or Special Headlines
2 = National News Headlines
3 = State News Headlines
4 = Central City News
5 = County-Wide News Items
6 = Suburb News
7 = Township 1 News
8 = Township 2 News
9 = The Business Page

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CHAPTER 6

Background Information

Chapter 6

BACKGROUND INFORMATION ON NEWS MEDIA ROLE

The playing of the News Media in APEX County entails a certain minimal technical know-how in the use of mass media tools.

1. Scenario

Your News Media role advisor is the owner and general manager of the newspaper that prints the METRO-APEX NEWS, the studio facilities of KAPX television station and the transmitter of KAPX RADIO. His interest is primarily in the business end of facilities management. You have been hired because of your professional competence as a news team, and the details of editorial policy, mode of operation and programming are your responsibility (as long as the facilities continue to make a profit). Some aspects of your operation are governed by Federal Communications Commission rules; equal time provisions, community service, programs, and liability for slander and defamation of character to mention a few. Law suits in the later category are renown for their high court costs, and if incurred through irresponsible reporting, are frowned upon by station management.

Because of its "track record" of integrity, good reporting and popular appeal, the News Media in APEX County enjoys a quasi-monopolistic position; yet, should the need for an additional news media arise due to the failure of the existing team to meet residents' need, you can stand assured the monopoly will disappear.

2. The Television News Programs

What can be done with this media tool will depend somewhat on the equipment and technical expertise available. Assuming the simplest system composed of a camera, a microphone and a videotape recorder, when properly used they can produce hard hitting programming. The addition of some quickly made studio props, relatively varied scripting to include commercial messages, interviews, even background music, will all enhance the appeal and impact of the program. Some helpful hints to assist in directing the taping:

1) announcer should maintain strong eye contact with the audience by looking directly at the camera lens;

2) interviews should be practiced before air time, kept short and to the point;

3) final program can be built with a series of short takes, fade-outs can be managed simply by placing the cameraman's hand over the lens;

4) announcer should try to say the story in his own words rather than reading extended texts. It helps the announcer to have a script written in bold capital letters, or to use a "cue-line" approach while adding the main contents in his own words;

5) don't forget the interrelatedness of being entertaining and informative. Information is often lost to inattentiveness. Commercial announcements are an ideal place to insert a dash of humor to pick up audience attention;

6) a variety of shots are essential in maintaining audience attention. As a rule of thumb, 15 to 25 seconds of one fixed shot is about all the average viewer can concentrate on. Variety can be created through the use of zoom on the lens, or by switching between two announcers alternating their stories; and

7) any written message, such as a logo or an illustration, can be built into the tape by just arranging to have it held or taped within easy swing of the camera. Bear in mind that the screen is a 3 to 4 height to base ratio, and can be filled by any illustrative material having those proportions.

3. Radio Announcements

Announcements of immediate importance can be made through a public address system in the game room. Check with the Game Overall Director for timing and length of these stories. Due to their tendency to totally stop game activity, only highest priority items merit this treatment. Under special conditions, the Game Overall Director may want to insert a full-fledge radio cast in the cycle of play.

4. News Flashes

Another way of handling news items of immediate importance is a public announcements board. Pads of newsprint sheets in a

prominant corner of a blackboard or bulletin board can serve as a posting place for such announcements. Make other game players aware that such a service exists and the message will get across.

5. Paid Announcements

Rarely will you be faced by the need to sell the use of mass media services. Yet often attaching a monetary cost to some types of stories can be a useful strategy in coping with the demands of players for coverage. Airing a paid announcement removes some of the responsibility for the story's contents from the station management, but creates the obligation of providing equal time to opposing viewpoints if there is a political opinion expressed.

A recommended pricing structure is $300 to $500 per newspaper line, and $1,000 per 15 second televised message.

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CHAPTER 7

References

Chapter 7

REFERENCES FOR NEWS MEDIA ROLE

Copperud, Roy. A Handbook for Journalist. University of Southern California, School of Journalism, Los Angeles, California, 1965.

Cirino, Robert. Power to Persuade: Mass Media and the News. New York: Bantam Books, Inc.

McLuhan, Marshall, and Fiore, Quentin. The Medium is the Message: An Inventory of Effects. New York: Bantam Books, Inc., 1967.

Murray, Michael. Videotape. New York: Bantam Books, Inc., 1974.

Talese, Gay. The Kingdom and the Power. New York: Bantam Books, Inc., 1965.

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CHAPTER 8

Annotated Printout

The following pages include the METRO-APEX NEWS which will give you a basis regarding some of the decisions made for Cycle 1. It will also provide you with a history of some of the problems in APEX County.

a

METRO-APEX NEWS

TEAM 1, EDITION 1 | SUNDAY, JUNE 30, 1974 | ANNOTATED PRINTOUT FOR CHAPTER 8

NATIONAL NEWS HEADLINES b

AUTOMOBILE PRODUCTION RECOVERS FROM SLUMP, HIGHEST SALES IN HISTORY PREDICTED.

SINGLE REAL ESTATE DEVELOPER SPEAKS IN FAVOR OF OPEN HOUSING AT CONGRESSIONAL COMMITTEE MEETING--OTHERS NEGATIVE.

U. S. CENSUS BUREAU ISSUES REPORT STATING THAT NET ANNUAL ADDITIONS TO THE HOUSING STOCK HAVE DECLINED TO 800,000 UNITS LEAVING A GAP OF 200,000 BETWEEN NEW UNITS ADDED AND NET NEW FAMILY FORMATIONS. CENTRAL CITY HOUSING SITUATION CRITICAL. c

DEFENSE SPENDING IS AGAIN AT AN ALL TIME HIGH-AS CONGRESSIONAL CRITICS WARN OF GUNS VS. BUTTER CONFLICT.

U. S. UNEMPLOYMENT RATE THE PAST YEAR WAS 4.1 PERCENT

STATE NEWS HEADLINES b

[illegible] MARCH ON THE STATE CAPITOL INFURIATES LAWMAKERS WHO SAY THEY WON'T BOW TO PRESSURE GROUP TACTICS.

STATE [illegible] PLANS TO WORK WITH COUNTY HEALTH AGENTS TO CRACK DOWN ON UNSAFE SEPTIC TANKS IN URBAN [illegible] METROPOLITAN AREA IN THE STATE. OLD SEPTIC TANKS AND INADEQUATE SEWER SYSTEMS MADE SUB-DIVISION DEVELOPMENTS DANGEROUS.

EDUCATORS PRESS STATE FOR GREATER AID TO LOCAL SCHOOL DISTRICTS, ARGUING WE ARE FALLING BEHIND THE NATIONAL LEADERS.

APEX CITED AS ONE OF THE WORST MIDDLE-SIZED CITIES WHO HAVE LET CAPITAL PLANT INVESTMENTS IN THE DOWNTOWN DETERIORATE. c

DEMOCRAT-REPUBLICAN DEADLOCK IN STATE SENATE IS BROKEN AS GOVERNOR INTERVENES TO FORCE AN EDUCATION-WELFARE PACKAGE.

WELFARE WORKERS IN TEN COUNTIES SIT IN TO PROTEST [illegible] ALLOCATIONS FROM STATE AND COUNTIES. TAXPAYER ANGER OVER DEMONSTRATIONS IN STATE IS GROWING, MAKING INCREASED STATE WELFARE PAYMENTS UNLIKELY THIS YEAR.

LOCAL NEWS ITEMS b

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a THE METRO-APEX NEWS IS PUBLISHED EACH CYCLE AND IS A PRIME SOURCE OF INFORMATION ABOUT CURRENT PROBLEMS AND EVENTS AND THEIR IMPACT ON APEX COUNTY.

b THE METRO-APEX NEWS FEATURES NATIONAL NEWS HEADLINES, STATE NEWS HEADLINES AND LOCAL NEWS ITEMS. THE "LOCAL NEWS ITEMS" ARE PRESENTED UNDER SUB-HEADINGS OF METROPOLITAN AND COUNTY, CENTRAL CITY, SUBURB, TOWNSHIP 1, TOWNSHIP 2, AND BUSINESS PAGE.

c NATIONAL AND STATE NEWS REFLECTS THE GENERAL STATE OF THE ECONOMY AND NEW GOVERNMENTAL POLICIES WHICH MAY IMPACT ON VARIOUS SEGMENTS OF THE APEX COMMUNITY.

d EACH YEAR CERTAIN ISSUES WILL APPEAR IN THE METRO-APEX NEWS WHICH REQUIRE DECISIONS FROM ALL ROLE PLAYERS. EACH ISSUE IS IDENTIFIED BY AN ISSUE NUMBER. THE ISSUES CONSIST OF A STATEMENT OF THE ISSUE AND SEVERAL PROPOSED ALTERNATIVE ACTIONS. EACH PLAYER SHOULD CHOOSE THE ALTERNATIVES HE FAVORS AND FILL OUT THE ELITE OPINION POLL OF HIS WORKSHEET.

e SOME ALTERNATIVES PROPOSE THE IMPLEMENTATION OF SPECIFIC PROJECTS. PROJECT NUMBERS SHOULD NOT BE CONFUSED WITH ISSUE NUMBERS.

f LOCAL NEWS ITEMS ARE IDENTIFIED BY THE ANALYSIS AREA IN WHICH THEY ORIGINATED.

g THE BUSINESS PAGE LISTS EXOFIRMS WHICH WOULD LIKE TO LOCATE IN APEX. THE FIRM WILL NORMALLY NOT LOCATE IN APEX UNLESS THE SPECIFIED CONDITIONS ARE MET.

h THE LOCATIONS PREFERED BY THE EXOFIRM ARE LISTED IN ORDER OF PREFERENCE, IE., AA 10 IS THE FIRST PREFERENCE, AA 25, SECOND CHOICE, ETC.

METROPOLITAN AND COUNTY b

RUNWAY EXPANSION NEEDED FOR AMFA AIRPORT. COST SET AT $350,000. PROJECT NO. 109. e

....PRECEDING IS ISSUE d AS POLITICIAN'S ULTIMATE DECISION BUT ELITE OPINION SOLICITED

---- ALTERNATIVE 1 FAVOR RUNWAY PROJECT 109

---- ALTERNATIVE 2 POSTPONE AND RECONSIDER e

---- ALTERNATIVE 3 OPPOSE RUNWAY PROJECT 109

COUNTY ROAD COMMISSIONER DEVANEY THAT SAND AND GRAVEL CONTRACTS BY ST. SWOPE ASPHALT COMPANY WILL CAUSE AN INCREASE IN COSTS OF HIGHWAY CONSTRUCTION IN THE AREA. THIS MAY BE A MOVE THAT WHICH COULD ULTIMATELY MEAN HIGHER TAXES STATEMENT.

STATE INSPECTOR LIKENS DUST PROBLEM FROM DUSTY ROADS CEMENT PLANT HAS-FILLING OPERATION TO CAUSES OF SILICOSIS IN MINING OPERATIONS.

STATE LEGISLATURE FACTS BAN ON ALL OPEN BURNING DUMPS. AREA SOLID WASTE MANAGER FACES MOUNTING PROBLEMS -- INADEQUATE INCINERATION, GROWING AMOUNTS OF WASTE, PUBLIC DISTRUST OF LANDFILLS, AND OUTDATED COLLECTION EQUIPMENT. AREA MAY BE BURIED IN ITS OWN TRASH.

AA 3 - f
OLD TIME RESIDENT CLAIMS, "THIS SMATTER POLLUTION IS GETTING WORSE EVERY YEAR. DONT KNOW HOW LONG I CAN HOLD OUT.

AA 4 -
INDUSTRY GROUP BLAMES HOMEOWNER BACKYARD BURNING AS PRIME CAUSE OF AMFA SMOG.

AA 5 -
SMOKE HAZE INCREASES HAZARDS OF AIRCRAFT LANDING. PILOT TELLS AMFA KIWANIS.

CENTRAL CITY b

PLANS COMPLETED FOR NEW CITY HALL. FUNDING SOUGHT. A $1.2 MILLION BOND ISSUE IS PROPOSED TO FUND A MODERN, EFFICIENT, WELL-DESIGNED CITY HALL TO REPLACE PRESENT 80-YEAR-OLD BUILDING IN AA 6. GENERAL SUPPORT OF COMMUNITY LEADERS IS ASKED FOR THIS LONG-OVERDUE IMPROVEMENT (PROJECT 86).

....PRECEDING IS ISSUE 1 POLITICIAN'S ULTIMATE DECISION BUT ELITE OPINION SOLICITED

---- ALTERNATIVE 1 FAVOR PROJECT 86

---- ALTERNATIVE 2 POSTPONE AND RECONSIDER

---- ALTERNATIVE 3 OPPOSE PROJECT 86

SUMMER DAY CAMPS PROPOSED FOR DISADVANTAGED YOUTH. STATE FUNDS, WITH CHARITY CONTRIBUTIONS, MAKE $100,000 AVAILABLE. PROVIDED CITY CAN COME UP WITH $120,000. PROGRAM NO. 10.

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ANNEXATION OF MAPLE GROVE AREA (AA 12) TO GO TO A VOTE. FAVORED BY CHAMBER OF COMMERCE DUE TO POSSIBLE INDUSTRIAL SITES AT FREEWAY INTERCHANGE. THE ANNEXATION OF THIS AREA IS ALSO OPPOSED BY ANTI-TAX GROUPS BECAUSE OF THE COST OF PUBLIC IMPROVEMENTS REQUIRED. SCHOOL DISTRICT ANNEXATION TIED TO CITY VOTE - BOTH MUST BE APPROVED TOGETHER.

....PRECEDING IS ISSUE SC DECIDED BY OPINION POLL MAJORITY AND REFERENDUM

---- ALTERNATIVE 1 FAVOR ANNEXATION OF AA 12

---- ALTERNATIVE 2 AVOID THE ISSUE

---- ALTERNATIVE 3 OPPOSE THE ANNEXATION

COMMUTERS REPORT IMPAIRMENT OF SENSE OF SMELL AFTER WEEK'S TRAVEL PAST TROJAN VARNISH COMPANY IN ANALYSIS AREA 10. DANNY DINKS, WHO PASSES THE PLANT FOUR TIMES DAILY, COMPLAINS HE CAN'T SMELL HIS GIRL'S PERFUME ANYMORE.

AA 4 -
RESIDENTS PRESS DEMANDS FOR SMALL CITY PARKING LOT AS LOCAL PARKING PROBLEMS MOUNT AND DOUBLE-PARKING CREATES SNARLS.

AA 9 -
HUGE CRACKS IN LOCAL STREETS CAUSE MAJOR ACCIDENT AS DELIVERY TRUCK SPINS OUT OF CONTROL. IMMEDIATE RESURFACING A 'MUST'

AA 3 -
GROWING TRAFFIC LOAD CITED. INSPECTOR MUGGERIDGE SAYS STREET WIDENING MUST BEGIN 'BEFORE IT'S TOO LATE.'

AA 6 -
OVERLOADING OF AGED WATER LINES BRINGS DEMANDS FOR IMMEDIATE EXPANSION OF SANITARY SEWER CAPACITY.

AA 8 -
STORM CAUSES BASEMENT FLOODING IN SEVERAL-BLOCK AREA AS STORM SEWERS OVERFLOW. ACTION DEMANDED NOW TO EXPAND CAPACITY.

AA 3 -
RECORD RAINFALL FLOODS AREA. EXPANSION OF LOCAL STORM SEWER SYSTEM NEEDED.

AA 6 -
WATER PRESSURE DEFEATED BY RAPIDLY-INCREASING USE. MAY HAMPER FIRE-FIGHTING EFFORTS UNLESS WATER MAINS ARE EXPANDED SOON.

AA 3 -
WATER MAIN EXPANSION NECESSARY TO MAINTAIN WATER PRESSURE PROGRESSIVELY LOWERED BY INCREASED USE OF AIR CONDITIONING.

AA 2 -
WAT M MAINS BURST FOUR TIMES IN TWO MONTHS. RESIDENTS, UNDERSTANDABLY IRRITATED, DEMAND 'FLASTING' MAJOR REPAIRS.

AA 6 -
'PARKS ARE NEEDED WHERE PEOPLE ARE--BUSING PEOPLE OUT OF THE CITY ISN'T FEASIBLE,' CLAIMS RESIDENT GROUP IN PETITION.

AA 8 -
SHELTER HOUSE PROPOSED FOR PARK. LOCAL CITIZENS COMPLAIN CONSTANTLY ABOUT POOR PICNIC FACILITIES.

AA 1 -
CITY YOUTH DEMANDS NEW PLAY FIELD EQUIPMENT. OFFICIALS HOWEVER CITE WHOLESALE THIEVERY AND IMPLY YOUTHFUL RACKETEERING.

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AA 12 -
HOMEOWNERS ASSOCIATIONS DEMAND CITY TAKE IMMEDIATE ACTION TO RESURFACE WINTER-DAMAGED NEIGHBORHOOD STREETS.

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AA 18 -
POORLY-CONSTRUCTED SANITARY SEWER SYSTEM CAUSES UNPLEASANT BLOCKAGES. RESIDENTS ARE CALLING FOR REPLACEMENT.

AA 19 -
TASTE OF WATER IS MAKING AREA RESIDENTS SICK. ONLY PERSON BENEFITING IS THE LOCAL CULLIGAN MAN.

AA 19 -
PARENTS GROUP WANTS LOCAL SWIMMING POOL SO CHILDREN WILL KEEP OFF STREETS ON HOT DAYS.

TOWNSHIP 1 (JOB. 3) b

AA 27 -
SAFETY SIGNAL INSTALLATION NECESSARY TO HALT INCREASING PEDESTRIAN ACCIDENTS AT BUSY SHOPPING CENTER INTERSECTION.

AA 21 -
AUTO INDUSTRY HOLDS KEY TO NATIONS FUTURE SAYS CHAMBER OF COMMERCE. PRESSURES POLITICIANS TO BUILD MORE PRIMARY STREETS.

AA 24 -
STORM SEWER EXTENSION DEMANDED BY IRATE CITIZENS. MILDEST SHOWERS TURN UNIMPROVED LOCAL STREETS INTO SUDDY QUAGMIRES.

AA 26 -
THREE FEET OF WATER INUNDATE LOCAL STREETS.ONLY LARGE-SCALE STORM SEWER CONSTRUCTION WILL PREVENT FURTHER OCCURRENCES.

AA 23 -
LOCAL CITIZENS HOPEFUL ABOUT GETTING WATER MAIN EXPANSION. PATIENCE WORN BY MANY DELAYS MAKES IT PRIME POLITICAL ISSUE.

AA 28 -
YOUNG BOMBERS INTIMIDATE TODDLERS IN LOCAL PARK. MOTHERS DEMAND CONSTRUCTION OF INDEPENDENT TOT LOTS.

TOWNSHIP 2 (JOB. 4) b

AA 21 -
STEADILY-INCREASING TRAFFIC FLOW ON PRIMARY THOROUGHFARE IN THE AREA UNDERSCORES NEED FOR WIDENING.

AA 15 -
NEW PRIMARY ROAD PUSHED BY RESIDENT GROUP TO AID COMMUTER CONGESTION PROBLEMS.

AA 22 -
DEVELOPERS CALL UPON CITY TO EXTEND LOCAL SANITARY SEWER MAINS TO AREA RIPE FOR DEVELOPMENT. NEW TRUNKLINES NEEDED.

AA 23 -
BASEMENTS FLOODED AND SLAB FOUNDATIONS ERODED AS RAINS OVERFLOW STORM SEWERS. INCREASED CAPACITY CONSIDERED MANDATORY.

AA 14 -
WATER FACILITIES FAIL TO PACE URBAN GROWTH AND PRIVATE WELLS ARE RELIABLE. MAJOR WATER MAIN CONSTRUCTION URGENT.

AA 15 -
COST-BENEFIT SHOWS FOLLY OF PUBLIC ICE SKATING RINK BUT COMMUNITY GROUP CONTINUES TO PRESS ITS DEMANDS ON POLITICIANS.

BUSINESS PAGE b

g NEW PIPES PLANNING TO CONC TO A.P.E.X. AREA

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(EXCEPTION NO. 41 PREFERS LOCATION IN ANALYSIS AREAS 10 25 17. WILL USE 8.80 ACRES.

SUPER CASCADES INC
WILL HAVE 200 EMPLOYEES AND WILL ADD 572000. DOLLARS TO THE TAX BASE.
POLITICIANS NOTE-- REZONING NEEDED TO V-4 (VACANT INDUSTRIAL).
STREETS COSTING 35000. DOLLARS ARE NEEDED.
REQUIRES INVESTMENT OF AT LEAST $ 200000. BY LOCAL BUSINESSMEN.

ZIPPY FOODS INC PREFERS (EXCEPTION NO. 81 PREFERS LOCATION IN ANALYSIS AREAS 5 6 24. WILL USE 3.00 ACRES.
WILL HAVE 20 EMPLOYEES AND WILL ADD 130000. DOLLARS TO THE TAX BASE.
POLITICIANS NOTE-- STREETS COSTING 35000. DOLLARS ARE NEEDED.
REQUIRES INVESTMENT OF AT LEAST $ 25000. BY LOCAL BUSINESSMEN.

MAIL-U-S PRINTERS (EXCEPTION NO. 103 PREFERS LOCATION IN ANALYSIS AREAS 8 9 9. WILL USE 1.50 ACRES.
WILL HAVE 100 EMPLOYEES AND WILL ADD 300000. DOLLARS TO THE TAX BASE.
POLITICIANS NOTE-- REZONING NEEDED TO V-4 (VACANT INDUSTRIAL).
REQUIRES INVESTMENT OF AT LEAST $ 25000. BY LOCAL BUSINESSMEN.